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## **Modelling of coastal hydrodynamics associated with coastal structures**

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Coastal hydrodynamics related to wave, current and wave-current interactions are important for many coastal engineering designs and applications. They allow the study of new engineering methods for coastal defense and play an essential role for the calculation of sediment transport and morphological evolution.

Prediction of hydrodynamics associated with coastal structures has largely relied on the empirical relation in the last 28 years supported by physical tests. Due to recent advances in computer power and development experienced by numerical models, use of a number of coastal hydrodynamic modeling has become a promising alternative to predict coastal hydrodynamics and is the most feasible approach to solving hydrodynamic problems. However, these models differed in model concepts, empirical formulation, consideration of hydrodynamic processes such as breaking, shoaling, refraction, diffraction and transmission.

Effective modeling of the coastal hydrodynamics allows the identification of the best protection techniques for a certain coastal area. Thence, a proper understanding of the models concepts is necessary to achieve an optimal functional design. This paper attempts to review available hydrodynamic models. The strength and limitation of each model will be discussed.